What is Claimed:

1. A method of communicating within a motion control system, said method comprising the steps of:

programming a plurality of drive cards to perform predetermined mathematical and logical functions in response to high-level commands;

configuring each of said plurality of drive cards with a respective unique predetermined delay time;

distributing intelligence throughout said motion control system by electrically interconnecting each of said plurality of drive cards with a local area network, each of said plurality of drive cards being further electrically connected to a corresponding component of said motion control system;

transmitting to said plurality of drive cards said high-level commands across said local area network;

delaying response to said high-level commands by each respective one of said plurality of drive cards according to said unique predetermined delay time;

responding to said high-level commands by each of said plurality of drive cards following the expiration of said unique predetermined delay time; and

temporarily suspending communication over said local area network following response by said plurality of drive cards to said high-level commands to thereby ensure deterministic communication over said local area network.

2. The method of communicating within a motion control system of claim 1, wherein said local area network comprises an Ethernet network.

3. The method of communicating within a motion control system of claim 1, wherein each said drive card includes a network controller, microprocessor, packet memory, memory, and firmware.

4. The method of communicating within a motion control system of claim 1, wherein each of said transmitting step and said responding step comprise the transmission of data packets across said local area network.

5. The method of communication within a motion control system of claim 4, wherein said transmitting step comprises a personal computer transmitting said data packets.

6. The method of communicating within a motion control system of claim 5, wherein said personal computer includes an operating system, said operating system being one of a non-real-time operating system and a real-time operating system.

7. The method of communicating within a motion control system of claim 6, wherein said personal computer includes motion control software running under said operating system.

8. The method of communicating within a motion control system of claim 4, comprising the further step of selectively storing within each of said plurality of drive cards said transmitted data packets.

9. The method of communicating within a motion control system of claim 8, comprising the further step of monitoring with said personal computer the level of transmitted data packets stored within each of said plurality of drive cards.

10. The method of communicating within a motion control system of claim 9, comprising the further steps of :

establishing upper and lower trigger points for the level of transmitted data packets stored

within each of said plurality of drive cards;

comparing the level of transmitted data packets stored within each of said plurality of drive cards with said upper and lower trigger points; and

adjusting the rate at which data packets are transmitted to each of said plurality of drive cards dependent at least in part upon said comparing step.

11. The method of communicating within a motion control system of claim 1, comprising the further step of establishing promiscuous peer-to-peer communication within said local area network whereby the responses of each respective one of said plurality of drive cards to a high-level command is received by each of the others of said plurality of drive cards.

12. The method of communicating within a motion control system of claim 11, comprising the further steps of:

storing within each respective one of said plurality of drive cards the responses to said high-level commands from each of the others of said plurality of drive cards;

determining the relevance of each of the responses stored within each of said plurality of drive cards; and

discarding non-relevant responses stored within each of said plurality of drive cards.

13. A networked distributed motion control system, comprising:

a local area network;

a personal computer electrically interconnected to said local area network;

at least one drive card interconnected to said local area network; and

at least one motor, each of said at least one motor interconnected with a corresponding one of said at least one drive card.

14. The network distributed motion control system of claim 13, wherein said local area network comprises an Ethernet network.

15. The networked distributed motion control system of claim 13, wherein each of said at least one drive card includes a respective network controller, microprocessor, packet memory, memory, and firmware.

16. The networked distributed motion control system of claim 13, further comprising at least one input/output device interconnected to a corresponding one of said at least one drive card.

17. The networked distributed motion control system of claim 13, further comprising operating system software, said operating systems software being one of a non-real-time operating system and a real-time operating system, said personal computer running said operating systems software.

18. The networked distributed motion control system of claim 17, wherein said non-real-time operating system software comprises a version of WINDOWS operating system.

19. The networked distributed motion control system of claim 13, further comprising a motor and drive subassembly, said motor and drive assembly including a housing, blocks of insulative material being mounted to said housing, a respective one of said at least one motor and a corresponding one of said at least one drive card are mounted within said housing, said drive being mounted to said blocks of insulative material.

20. The networked distributed motion control system of claim 13, wherein said housing includes a power connector and a network connector.